

Epitaxially sensitized ultrathin dump iodide tabular grain emulsions

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Abstract

An improved spectrally sensitized ultrathin tabular grain emulsion is disclosed in which tabular grains (a) having $\bar{a}111\bar{u}$ major faces, (b) containing greater than 70 mole percent bromide, based on silver, (c) accounting for greater than 90 percent of total grain projected area, (d) exhibiting an average equivalent circular diameter of at least 0.7 μ m, (e) exhibiting an average thickness of less than 0.07 μ m, and (f) having latent image forming chemical sensitization sites on the surfaces of the tabular grains, are spectrally sensitized and improved by employing dump iodide host tabular grains and, in forming the surface chemical sensitization sites, at least one silver salt epitaxially located on the tabular grains. A photographic element is disclosed comprised of a support, a first silver halide emulsion layer coated on the support and sensitized to produce a photographic record when exposed to specular light within the minus blue visible wavelength region of from 500 to 700 nm, a second silver halide emulsion layer capable of producing a second photographic record coated over the first silver halide emulsion layer to receive specular minus blue light intended for the exposure of the first silver halide emulsion layer, the second silver halide emulsion layer being capable of acting as a transmission medium for the delivery of at least a portion of the minus blue light intended for the exposure of the first silver halide emulsion layer in the form of specular light, wherein the second silver halide emulsion layer is comprised of the improved spectrally sensitized ultrathin tabular grain emulsion of the invention. The ultrathin dump iodide tabular grain emulsions with silver salt epitaxy chemical sensitization have been observed to produce larger than expected speed increases, to produce higher than expected contrasts, to be unexpectedly specularly transmissive and therefore compatible with forming sharp photographic images in underlying emulsion layers, to exhibit a higher percentage of total light absorption in the wavelength region of maximum absorption by the spectral sensitizing dye or dyes employed, and to exhibit a surprising tolerance of inadvertent manufacturing variances.

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